NEW ZEALAND

EDICT OF GOVERNMENT

In order to promote public education and public safety, equal justice for all, a better informed citizenry, the rule of law, world trade and world peace, this legal document is hereby made available on a noncommercial basis, as it is the right of all humans to know and speak the laws that govern them.

AS-NZS 4353 (1995) (English): Portable fire extinguishers - Aerosol type [By Authority of Australian Consumer Protection Notice No. 9 of 2004]

We will sell to no man,
we will not deny or defer to any man either justice or right.
Magna Carta—Tūtohinga Nui
Kore rawa e hoko ki te tangata, e kore e whakakāhoretia,
e tautuku rānei te tangata ki te ture, tika ranei.

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

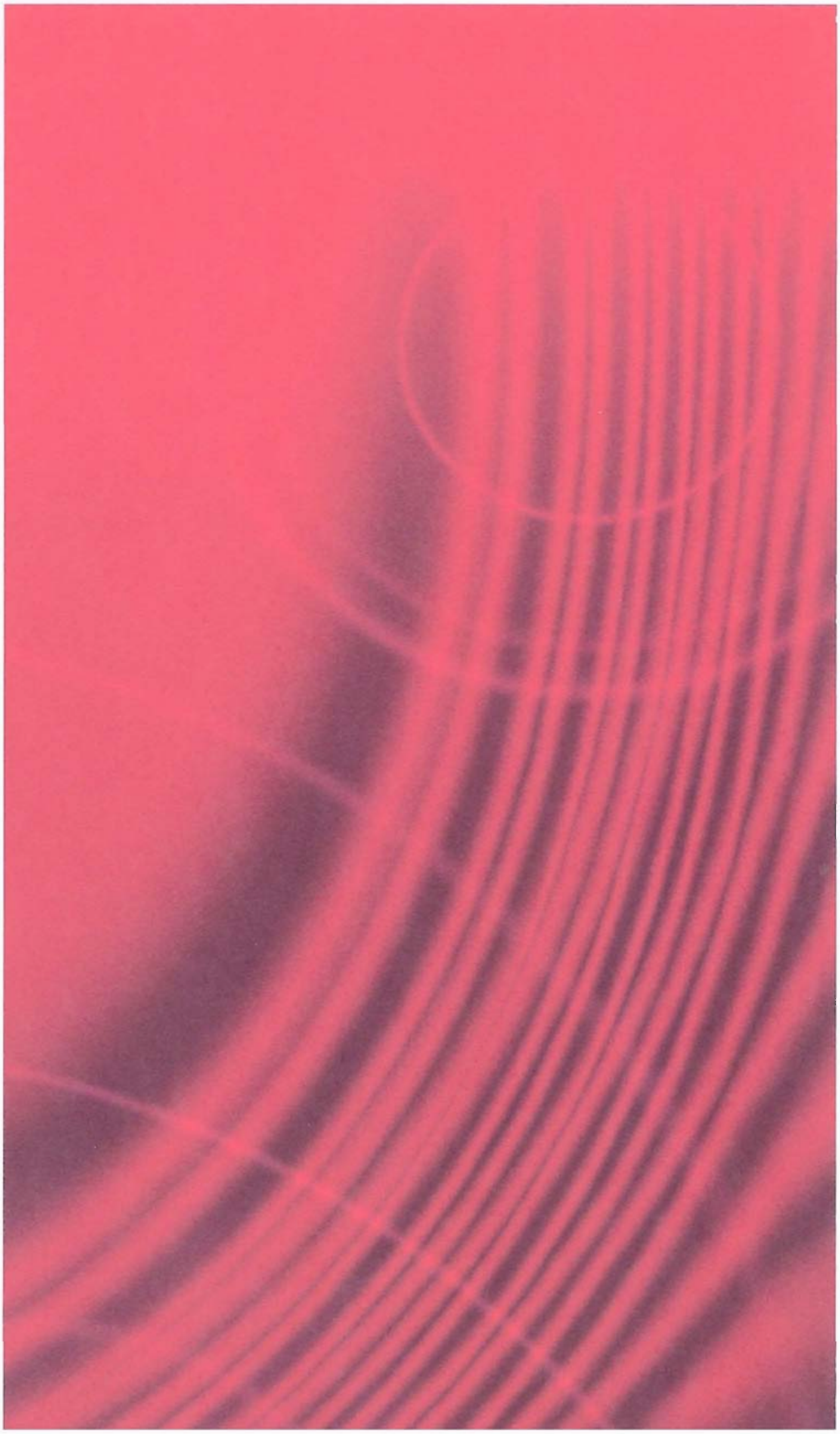
PROTECTED BY COPYRIGHT

AS/NZS 4353:1995

STANDARDS
NEW ZEALAND
PAEREWA AOTEAROA

Australian/New Zealand Standard®

Portable fire extinguishers—Aerosol type



STANDARDS
Australia

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee FP/3, Fire Extinguishers. It was approved on behalf of the Council of Standards Australia on 30 August 1995 and on behalf of the Council of Standards New Zealand on 4 September 1995. It was published on 5 December 1995.

The following interests are represented on Committee FP/3:

Australian Construction Service—Department of the Arts and Administrative Services
Australian Fire Authorities Council
Australian Fire Protection Association
Commonwealth Fire Board
Department of Consumer Affairs, N.S.W.
Department of Defence, Australia
Federal Bureau of Consumer Affairs
Fire Protection Industry Association of Australia
Fire Trainers Association of Australia
Insurance Council of Australia
New Zealand Fire Equipment Association
Office of Fair Trading and Business Affairs, Vic.
Western Australian Fire Brigade Board
WorkCover Authority of N.S.W.

Additional interests participating in preparation of Standard:

Aerosol Association of Fiji
Metropolitan Fire Brigades Board

Review of Australian Standards. *To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.*

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

This Standard was issued in draft form for comment as DR 94023.

AS/NZS 4353:1995

Australian/New Zealand Standard®

Portable fire extinguishers—Aerosol type

PUBLISHED JOINTLY BY:

STANDARDS AUSTRALIA
1 The Crescent,
Homebush NSW 2140 Australia

STANDARDS NEW ZEALAND
Level 10, Standards House,
155 The Terrace,
Wellington 6001 New Zealand

ISBN 0 7337 0110 8

PREFACE

This Standard was prepared by the Standards Australia/Standards New Zealand Committee FP/3 on Fire Extinguishers as a Joint Standard.

This Standard has been written with the aim of producing a specification for a relatively inexpensive, small, disposable fire extinguisher for household use with an acceptable minimum level of performance. This type of extinguisher is intended for use only in situations where fires of limited proportions are anticipated because of the nature of some process or activity where the possibility of fire spreading to other material is remote or where people may be present at the likely times of risk.

The Standard therefore is unlikely to meet the requirements of the various specifying authorities for more comprehensive protection. These extinguishers are not intended to supplant the more robust higher performance extinguishers which should still be regarded as the principal type to meet the need of various authorities.

In order to minimise hindrance to developments in design, the general emphasis is on performance requirements rather than on dimensional requirements.

The term 'normative' has been used in this Standard to define the application of the appendix to which it applies. A 'normative' appendix is an integral part of a Standard.

© Copyright — STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Users of Standards are reminded that copyright subsists in all Standards Australia and Standards New Zealand publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia or Standards New Zealand may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia or Standards New Zealand. Permission may be conditional on an appropriate royalty payment. Australian requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia. New Zealand requests should be directed to Standards New Zealand.

Up to 10 percent of the technical content pages of a Standard may be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia or Standards New Zealand.

Inclusion of copyright material in computer software programs is also permitted without royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia or Standards New Zealand at any time.

CONTENTS

Page

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE 5
1.2 APPLICATION 5
1.3 REFERENCED DOCUMENTS 5
1.4 DEFINITIONS 5
1.5 CLASSIFICATION AND RATING 6

SECTION 2 MATERIALS OF CONSTRUCTION

2.1 GENERAL 7
2.2 STABILITY 7
2.3 EXPOSED NON-METALLIC COMPONENTS 7
2.4 EXTINGUISHER INTERIOR 7
2.5 EXTERNAL SURFACES 7

SECTION 3 DESIGN

3.1 GENERAL 8
3.2 CONTAINER 8
3.3 ACTUATING MECHANISM 8
3.4 PRESSURE INDICATOR 8
3.5 SUPPORT FITTING 8

SECTION 4 METHOD OF OPERATION

4.1 GENERAL 8
4.2 ANTI-DISCHARGE DEVICE 8

SECTION 5 CHARGE

5.1 GENERAL 9
5.2 MATERIALS 9
5.3 MASS OR VOLUME 9

SECTION 6 PERFORMANCE REQUIREMENTS

6.1 GENERAL 10
6.2 INTERMITTENT DISCHARGE 10
6.3 EFFECTIVE DISCHARGE 10
6.4 PRESSURE RETENTION 10
6.5 GAS LEAKAGE 10
6.6 EXTERNAL CORROSION 10
6.7 STORAGE AND CORROSION 10
6.8 POWDER COMPACTION 10
6.9 SUPPORT FITTING 11
6.10 EXTINGUISHER OPERATION 11
6.11 OPERATION HEAD OR VALVE 11
6.12 SIPHON TUBE ASSEMBLY 11
6.13 EXTINGUISHER DISCHARGE 11
6.14 COMPONENTS OF PLASTICS MATERIAL 11

Page

SECTION 7 TEST REQUIREMENTS

7.1 GENERAL 12
7.2 INTERMITTENT DISCHARGE 12
7.3 EFFECTIVE DISCHARGE TEST 12
7.4 PRESSURE TEST 12
7.5 GAS LEAKAGE TEST 12
7.6 EXTERNAL CORROSION TEST 12
7.7 STORAGE AND CORROSION 13
7.8 POWDER COMPACTION TEST 13
7.9 SUPPORT FITTING TESTING 14
7.10 EXTINGUISHER DROP TEST 14
7.11 OPERATING HEAD IMPACT TEST 14
7.12 SIPHON TUBE TEST 14
7.13 CLEAR PASSAGE TEST 14
7.14 TEST FOR PLASTIC MATERIALS 14

SECTION 8 IDENTIFICATION 15

SECTION 9 INSTRUCTIONS AND MARKINGS

9.1 GENERAL 16
9.2 MARKINGS 16
9.3 SIZE OF LETTERING AND PICTOGRAPHS 16
9.4 OPERATION 16
9.5 IDENTIFICATION 19
9.6 LABELLING 20
9.7 EXPORT EXTINGUISHERS 20

SECTION 10 PACKAGING 21

APPENDICES

A EXTERNAL CORROSION TEST 22
B OPERATING HEAD IMPACT TEST 23

First published as AS/NZS 4353:1995.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard

Portable fire extinguishers—Aerosol type

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard specifies the requirements for portable stored-pressure fire extinguishers of the aerosol type.

NOTES:

1 A portable non-rechargeable, stored-pressure fire extinguisher of the aerosol type is generally referred to in this Standard as 'an extinguisher' or 'the extinguisher.'

2 *Production Certification* Users for this Australian/New Zealand Standard are advised to consider the desirability of third party certification of product conformity with this Standard based on testing and continuing surveillance, which may be coupled with assessment of a supplier's quality systems.

1.2 APPLICATION Portable aerosol, stored-pressure fire extinguishers shall comply with the requirements of this Standard.

The extinguishers are designed for one use only, not to be refilled and to be discarded after any use, or depressurised and discarded before the expiry date shown on the label.

1.3 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS	
1850	Portable fire extinguishers—Classification, rating and performance testing
2278	Metal aerosol containers
2700	Colour standards for general purposes
NZS	
4507	Specification for fire testing and rating of portable fire extinguishers
5807	Code of practice for industrial identification by colour, wording or other coding

1.4 DEFINITIONS For the purpose of this Standard, the definitions below apply.

1.4.1 Actuating mechanism—the mechanism which sets in train an action which unseals, releases, pierces or fractures a valve, seal or frangible tip to initiate a discharge or enables a discharge to be commenced by the operation of any flow control nozzle.

1.4.2 Aerosol container—a non-refillable container designed to hold its intended contents at a pressure greater than atmospheric, the pressure being provided by means of propellant, and designed to dispense those contents by means of a valve.

1.4.3 Aerosol fire extinguisher—a non-rechargeable fire extinguisher in which the expellant gas is stored under pressure with the extinguishant in an aerosol container.

1.4.4 Anti-discharge device—a device designed to prevent accidental discharge of the extinguisher.

1.4.5 Anti-tamper seal—a device which visually indicates that an attempt has been made to actuate the extinguisher.

1.4.6 **Discharge fittings**—the system through which the extinguishant is discharged and may include a siphon tube.

1.4.7 **Extinguishant**—agent used to control fire.

1.4.8 **Extinguisher size**—the mass or volume of extinguishant with which the extinguisher was fire-rated.

1.4.9 **Maximum developed pressure**—the pressure developed by the contents of a cylinder in equilibrium at the maximum service temperature.

1.4.10 **Maximum service temperature**—the maximum temperature to which an extinguisher will be subjected to in normal service, to be taken as 65°C.

1.4.11 **Operating head, (stored pressure type)**—the component which breaks, ruptures or opens the primary seal.

1.4.12 **Portable fire extinguisher**—an appliance containing an extinguishant which can be discharged onto a fire by the action of internal pressure. A portable fire extinguisher is designed to be carried and operated by hand and has a gross mass which does not exceed 23 kg.

1.4.13 **Pressure indicator**—a device which indicates the pressure status of the extinguisher.

1.4.14 **Siphon tube**—a tube through which the extinguishant is conveyed to the operating head.

1.4.15 **Support fitting**—a quick-release bracket or hook which, when fixed to a surface, retains the extinguisher.

1.4.16 **Visible length**—the length of the container which is visible when the operating head or anti-discharge device is fitted.

1.4.17 **Working pressure**—the internal pressure of the extinguisher in kilopascals at 23 ±2°C.

1.5 CLASSIFICATION AND RATING

Classification and rating of extinguishers shall be determined from the results of test fires set out in AS 1850 or NZS 4507.

When an extinguisher is rated for more than one class of fire, the full rating shall be expressed as the rating for A class fires first, then for B class and F class, e.g. 1A:5B:1F.

In addition to its classification and rating, a fire extinguisher which is suitable for use on flammable gas fires bears the letter 'C', following the classification and rating, e.g. 1A:5B:1F:C.

Also, where an extinguisher is suitable for use on fires involving energised electrical equipment it shall bear the letter 'E' in brackets, following the classification and rating, e.g. 1A:5B:1F:C:(E).

SECTION 2 MATERIALS OF CONSTRUCTION

2.1 GENERAL All components of an extinguisher shall be of a corrosion-resistant material or shall be suitably treated to resist corrosion.

The manufacturer shall ensure that the materials of construction are compatible with the extinguishant and expellant gas so that corrosion does not occur when they contact the aerosol container or its attachments. All materials used in the container assembly shall be mutually compatible.

2.2 STABILITY When tested in accordance with Clause 7.7, materials in contact with the extinguishant or expellant gas shall—

(a) be resistant to degradation by the extinguishant and expellant gas; and

(b) be capable of retaining their dimensional stability to the extent that the performance of the extinguisher is not adversely affected.

2.3 EXPOSED NON-METALLIC COMPONENTS Materials used in the manufacture of non-metallic components that may be exposed to ultraviolet light in the field shall be UV-stabilised.

2.4 EXTINGUISHER INTERIOR The extinguisher interior shall be clean and free from contaminants at the commencement of filling.

2.5 EXTERNAL SURFACES The extinguisher shall pass the external corrosion test (see Clause 7.6).

SECTION 3 DESIGN

3.1 GENERAL The extinguisher designed to this Standard shall provide for—

(a) it's operation by one operator;

(b) the operating head to be at the top;

(c) a clear indication whether or not it has been operated; and

(d) a clear indication of direction of discharge.

3.2 CONTAINER The aerosol container shall conform with the requirements of Table 1.1, Group one or two and pressure rating High of AS 2278.

3.3 ACTUATING MECHANISM The actuating mechanism shall not necessitate any movement to be repeated in order to initiate discharge of the extinguisher and shall operate at an applied force not exceeding 100 N at 10–25°C.

3.4 PRESSURE INDICATOR The extinguisher shall be fitted with a pressure-indicating device. The indicator shall be capable of indicating the nominal working pressure within ±10% at 23 ±2°C. Extinguishers fitted with a pressure-indicating device of the 'go-no-go' type that does not meet the above requirements shall be subjected to a fire test in accordance with AS 1850 at the lowest point of the extinguisher manufacturer's specification.

3.5 SUPPORT FITTING

3.5.1 General Every extinguisher shall be provided with a support fitting for, at least, static mounting. Any support fitting shall be capable of supporting not less than five times the gross mass of the extinguisher.

3.5.2 Quick-release brackets Where an extinguisher is supplied with a bracket or holder into, or on, which the extinguisher can be mounted and from which it can be easily removed (see Note) and the operation of any release mechanism allows the extinguisher to fall, the operating end of the release mechanism shall not protrude beyond the front projection line of the extinguisher.

The bracket shall not obscure the markings set out in Clauses 9.2(a), (b) and 9.4.6.

NOTE: In the case of bracket-held extinguishers, the term 'easily removed' is considered to mean a removal time of not greater than 5 s.

SECTION 4 METHOD OF OPERATION

4.1 GENERAL Suitable mechanical means shall be provided whereby the sealing device of the extinguisher is opened, ruptured or pierced allowing the contents of the extinguisher to be discharged.

4.2 ANTI-DISCHARGE DEVICE There shall be a safety device to prevent inadvertent operation and it shall release in response to an applied force not exceeding 100 N.

SECTION 5 CHARGE

5.1 GENERAL A non-combustible, non-toxic trace gas, compatible with the extinguishant and materials of construction, may be added to the charge to facilitate the testing for leakage of gas.

5.2 MATERIALS The charge for each type of extinguisher shall be as follows:

(a) **Water type**

  (i) Water to which may be added corrosion inhibitors, freezing point depressants and wetting agents. Such additions shall not cause the solution to be corrosive, flammable, combustible or toxic.

  (ii) Inert gas or air stored under pressure.

(b) **Wet chemical type**

  (i) An aqueous solution, having a pH value not exceeding 10, usually of alkali metal salts, primarily formulated for fires involving cooking oils or fats. The solution shall be non-flammable and shall not produce toxic fumes.

  (ii) Inert gas or air stored under pressure.

(c) **Foam type**

  (i) Foam-producing materials, being a mixture of foam liquid and water.

  (ii) Inert gas or air stored under pressure.

(d) **Powder type**

  (i) Powder used as an extinguishant. The powder shall retain its free-flowing properties at all times.

  (ii) Inert gas or air stored under pressure.

(e) **Vapourizing liquid type**

  (i) A vapourizing-liquid, or blend of vapourizing-liquids, as an extinguishant.

  (ii) A propellant, if required, of inert gas or air stored under pressure.

5.3 MASS OR VOLUME A correctly-charged extinguisher, operated in an upright position at a temperature of 10–25°C and under still air condition shall discharge not less than the percentage of its contents given in Table 6.1 when tested in accordance with Clause 7.3.

SECTION 6 PERFORMANCE REQUIREMENTS

6.1 GENERAL Extinguishers designed to this Standard shall be required to pass one of the fire tests given in AS 1850 or NZS 4507.

Extinguishers not having an (E) capability (see Clause 1.5) shall be marked with the electrical prohibition sign given in Clause 9.4.2.

6.1.1 Fire rating The classification and rating for an extinguisher shall be determined from the results of the appropriate fire test set out in AS 1850 or NZS 4507.

6.1.2 Electrical capability The suitability of an extinguisher for use on fires which involve energised electrical equipment shall be determined in accordance with AS 1850 or NZS 4507.

6.2 INTERMITTENT DISCHARGE The extinguisher shall be capable of operating satisfactorily with an interrupted discharge cycle when tested in accordance with Clause 7.2.

6.3 EFFECTIVE DISCHARGE The minimum effective discharge of extinguishers described in this Standard shall comply with Table 6.1 when tested in accordance with Clause 7.3.

TABLE 6.1

EFFECTIVE DISCHARGE TIME AND MASS OR VOLUME

Extinguisher type	Minimum effective discharge time, s	Minimum discharge % mass, kg or volume, L
Water	10	95
Wet chemical	10	95
Foam	10	95
Vapourizing-liquid	8	95
Powder	8	85

6.4 PRESSURE RETENTION Extinguishers designed to this Standard shall conform with the requirements of AS 2278 when tested in accordance with Clause 7.4.

6.5 GAS LEAKAGE Extinguishers tested in accordance with Clause 7.5 shall have a maximum loss of content not exceeding the equivalent of 3% of mass per year of contents in the case of vapourizing-liquid extinguishers or 3% over one year of propellent gas in the case of stored pressure extinguishers.

6.6 EXTERNAL CORROSION Extinguishers shall be capable of passing the effective discharge test when tested in accordance with Clause 7.6.

6.7 STORAGE AND CORROSION The extinguisher shall be capable of passing the intermittent discharge test and the effective discharge test when tested in accordance with Clause 7.7.

6.8 POWDER COMPACTION Powder type extinguishers designed to this Standard shall discharge not less than 85% of their contents when tested on accordance with Clause 7.8.

6.9 SUPPORT FITTING Every extinguisher shall be provided with a support fitting for at least static mounting. Any support fitting shall be capable of supporting not less than five times the gross mass of the extinguisher when tested in accordance with Clause 7.9.

6.10 EXTINGUISHER OPERATION The extinguisher shall be capable of effective discharge when tested in accordance with Clause 7.10.

6.11 OPERATION HEAD OR VALVE The extinguisher shall be capable of effective discharge when tested in accordance with Clause 7.11.

6.12 SIPHON TUBE ASSEMBLY The siphon tube and any attachment shall not disengage when tested in accordance with Clause 7.12.

6.13 EXTINGUISHER DISCHARGE Every extinguisher shall be tested in accordance with Clause 7.13.

6.14 COMPONENTS OF PLASTICS MATERIAL Components of plastic material that are under continuous pressure shall pass the appropriate test set out in Clause 7.14.

SECTION 7 TEST REQUIREMENTS

7.1 GENERAL Except where otherwise stated in the text, extinguishers used for testing shall be conditioned as follows:

(a) Correctly filled and charged.

(b) Stored at a temperature of 22 ±8°C before tests are carried out and maintained within this temperature range until tested. The ambient temperature for carrying out tests is −5°C to 30°C.

(c) For discharge performance tests given in Section 6 use extinguishers fitted with a nozzle cap, if normally fitted.

(d) For the test described in Clauses 7.2 and 7.3 first condition all powder extinguishers in accordance with Clauses 7.8.1 and 7.8.2.

7.2 INTERMITTENT DISCHARGE The extinguisher shall be subjected to an interrupted discharge as follows—

(a) the extinguisher shall be discharged for nominally one-half the minimum discharge time with the valve open; and

(b) for a minimum of two cycles of 10 s nominal with the valve closed, and 3 s minimum with the valve open.

Not more than 3 s shall elapse between the opening of the control valve and the commencement of discharge.

7.3 EFFECTIVE DISCHARGE TEST Weigh the extinguisher and record the mass. Do not remove the nozzle cap if fitted. Discharge the extinguisher in the normal operating mode in its designed configuration and record the times at the following:

(a) Operation of the valve.

(b) The end of the effective discharge, that is, when the propellant gas suddenly appears or its proportion suddenly increases, as indicated by a marked change in the character of the discharge.

Shut off the extinguisher at the end of the effective discharge.

The extinguisher shall be reweighed and the mass recorded before proceeding to completely empty the residual extinguishant from the body of the extinguisher. The empty extinguisher shall be reweighed and the mass recorded. All weights to include the nozzle cap where appropriate.

Calculations shall be performed to ascertain the percentage of contents discharged from the extinguisher.

7.4 PRESSURE TEST Extinguishers designed to this Standard shall comply with the pressure test requirements of AS 2278.

7.5 GAS LEAKAGE TEST Every extinguisher shall be tested for gas leakage by instrumental means. The maximum leak rate permitted shall be in accordance with Clause 6.5 after five years, the pressure in the extinguisher shall be not less than the minimum discharge pressure.

7.6 EXTERNAL CORROSION TEST Two charged extinguishers shall be subjected to the corrosion test given in Appendix A. At the conclusion of the test, the extinguishers shall pass the effective discharge test in accordance with Clause 7.3.

7.7 STORAGE AND CORROSION

7.7.1 General Select 48 extinguishers and examine them for leakage in accordance with Clause 7.5.

7.7.2 Storage All of the specimen extinguishers shall be stored in four groups, each of twelve extinguishers, for 40 ±2 weeks under the conditions given in Table 7.1.

TABLE 7.1
STORAGE CONDITIONS FOR EXTINGUISHER TESTS

Group	Attitude	Temperature, °C
1	Upright	20 ±5
2	Inverted	20 ±5
3	Upright	38 ±5
4	Inverted	38 ±5

7.7.3 Discharge after storage Examine all of the specimen extinguishers for leakage in accordance with Clause 7.5.

Select and discharge the specimen extinguishers as follows:

(a) Two from each group in accordance with Clause 7.2.

(b) Six from each group in accordance with Clause 7.3.

(c) Discharge the balance of the specimen extinguishers and visually examine them for corrosion or other chemical degradation.

7.8 POWDER COMPACTION TEST

7.8.1 General Select 48 extinguishers and examine them for leakage in accordance with Clause 7.5. Each extinguisher in turn shall be held in the vertical position and dropped 500 times from a height of 16 ±1 mm at a rate of 1 ±0.02 Hz onto a rigid horizontal steel plate having dimensions greater than those of the extinguisher base.

7.8.2 Bonding All of the specimen extinguishers shall be stored for not less than 90 days without being disturbed. Prior to the extinguishers being discharged they shall be stored at temperatures of 10–25°C for not less than 24 hours.

7.8.3 Discharge after compaction At the completion of the bonding period, the testing authority shall select thirty-two of the bonded extinguishers and weigh and record the mass of each one before carrying out discharge tests as follows:

(a) Test twenty-four of the selected extinguishers for compliance with Clause 7.2.

(b) Test the remaining eight extinguishers for compliance with Clause 7.3.

The extinguisher shall be re-weighed and the mass recorded before proceeding to completely empty the residual extinguishant from the body of the reweighed and the mass recorded. All weights to include the nozzle cap where appropriate.

Calculations shall be performed to ascertain the percentage of contents discharged from the extinguisher.

7.8.4 Acceptance Criteria All the extinguishers discharged must discharge not less than 85% of their contents.

7.9 SUPPORT FITTING TESTING The support fitting shall be affixed to a vertical supporting surface in accordance with the manufacturer's instructions. A correctly charged extinguisher shall be mounted on the fixture and a load of not less than four times the gross mass of the extinguisher shall be applied vertically downward on to the top of the extinguisher and maintained there for a period of 5 min.

Upon removal of the test load, the extinguisher shall remain supported by the test fixture. In addition, it shall then be possible to remove the extinguisher from the fixture in the normal manner and the extinguisher shall be operable.

No defects shall be evident which would prevent the extinguisher from the complying with the intermittent discharge requirement (see Clause 7.2).

NOTE: Failure of the fastenings used to affix the support fitting to the backing does not constitute failure of the support fixture. If such failure should occur, the test should be repeated.

7.10 EXTINGUISHER DROP TEST A correctly charged extinguisher shall be held approximately horizontal, with any projections uppermost, and dropped from a height of not less than 600 mm onto a steel-floated concrete slab not less than 80 mm thick in such a way as to strike the concrete in a substantially horizontal position. The test shall be repeated with the extinguisher held approximately vertical, with the operating head at the top and the base at a height of not less than 600 mm from the slab, so that the extinguisher strikes the concrete in a substantially vertical position. The extinguisher shall pass the effective discharge test given in Clause 7.3 not less than 5 min after the conclusion of the drop test.

7.11 OPERATING HEAD IMPACT TEST When tested in accordance with Appendix B, the operating head shall comply with the following:

(a) It shall not leak.

(b) The effective discharge requirement (see Clause 7.3).

7.12 SIPHON TUBE TEST The siphon tube and any attachments shall not disengage when subjected to a steady, axially applied tensile force F at a temperature between 10°C and 25°C for 1 min. The force, in newtons, shall be determined from the following equation:

$$F = 1.5\ (P \times A) \qquad \ldots (1)$$

where

P = working pressure, in pascals

A = internal cross-sectional area of siphon tube, in m^2

7.13 CLEAR PASSAGE TEST The entire passage through which the extinguishant flows shall be tested for free passage.

7.14 TEST FOR PLASTIC MATERIALS Components of plastics material that are under continuous pressure shall be subjected to the following test as applicable:

(a) *Pressure test* The component shall withstand, without rupture, a pressure of not less than five times the maximum developed pressure. The test shall be conducted at the test temperatures of 0°C and 65°C, with the component conditioned at the test temperature for not less than 24 h for test at 0°C and 4 h for test at 65°C prior to the test.

(b) *Impact test* In addition to the requirements of Clause 7.10 and the procedures given in Appendix B, the test shall be repeated at a temperature of not less than 65°C, with the component conditioned at the test temperature for not less than 4 h prior to each test series.

SECTION 8 IDENTIFICATION

The container shall be coloured red approximating R13 of AS 2700 or 04E53 of NZS 5807 over the whole of the body.

SECTION 9 INSTRUCTIONS AND MARKINGS

9.1 GENERAL Unspecific terms relating to the applications such as 'multi', 'general' or 'universal' shall not appear on any marking or literature relating to a fire extinguisher.

The container of each extinguisher shall be marked with identification and operating instructions (see Clause 9.4) which shall be clearly visible when the extinguisher is mounted in the support fixture.

The following information shall be provided:

(a) Drawings indicating recommended locations and orientation for the installation of extinguishers.

(b) Warnings of a decrease in operational effectiveness resulting from incorrect installation.

(c) Advice on the method of location, installation and any additional details on the limitations of use and method of operation.

9.2 MARKINGS Markings shall be displayed on the extinguisher by means of painting or approved durable labels.

Every extinguisher shall be marked with the following:

(a) The words 'STORED PRESSURE AEROSOL FIRE EXTINGUISHER'.

(b) The type of charge, e.g. Powder AB(E) or B(E).

(c) The mass of contents, in grams or millilitres.

(d) The words 'DISCARD AFTER ANY USE. DEPRESSURIZE AND DISCARD BEFORE' followed by a date five years after the date of manufacture of the extinguisher in month and year, e.g. 6/2000.

(e) The words 'ONE USE ONLY—NOT REFILLABLE'.

(f) Fire test rating achieved as specified in AS 1850 or NZS 4507 and this Standard.

(g) The words 'DO NOT INCINERATE OR PUNCTURE THIS CAN EVEN WHEN EMPTY. KEEP IN A COOL PLACE'.

9.3 SIZE OF LETTERING AND PICTOGRAPHS The markings required by Clauses 9.2(a), 9.2(b) 9.2(c), 9.2(d), 9.2(e), 9.4.2 and 9.4.3 shall be in letters not less than 4 mm high and of a colour contrasting with its background. Pictographs, in accordance with Clause 9.4, shall each occupy not less than 30° of the arc of the container circumference.

9.4 OPERATION

9.4.1 General The following information shall be displayed on the front of the extinguisher and be contained within an arc no greater than 120° of the arc of the container circumference and separate from all other markings by not less than 4 mm on each side.

9.4.2 Extinguisher use and limitations The use and any limitations of the extinguisher shall be depicted by appropriate pictographs (see Figure 9.1).

Any uses or limitations not covered by pictographs shall be written.

9.4.2.1 *Safe condition signs* shall have white symbols and a border on a green field approximating G21 Jade of AS 2700 or safety green 14 E53 of NZS 5807.

9.4.2.2 *Prohibition signs* shall have black symbols on a white field with a red diagonal bar and border. The red shall approximate R13 signal red of AS 2700 or 04 E53 of NZS 5807.

9.4.3 Instructions for operation The instructions for operation shall be illustrated by simple pictographs or drawings (which are clear and proportional to each other) in not more than four stages.

Instructions for operation shall be arranged as follows:

(a) The word 'INSTRUCTIONS' shall be at the top of the panel.

(b) The instructions for operation shall be in the form of numerically sequenced pictographs. A single pictograph may include two instructions.

9.4.4 Sequence of pictographs The sequence of pictographs shall illustrate, with both pictures and words, the recommended actions necessary for the intended operation of the extinguisher. The lettering shall be all in upper case in plain style and in a colour contrasting with the background.

The sequence shall be as follows:

(a) Preparing the extinguisher for use by removing the anti-discharge device or cap.

(b) Aiming the extinguisher at the base of the fire, including any recommended distance from the fire at which to begin discharge, and indicating the intended operating attitude of the extinguisher.

(c) Taking whatever action is necessary to initiate the intended discharge of the extinguisher.

(d) Describing the intended method of applying the extinguishant onto the fire.

(e) Discard after use.

9.4.5 Preferred method of operation The following are examples of suitable instructions:

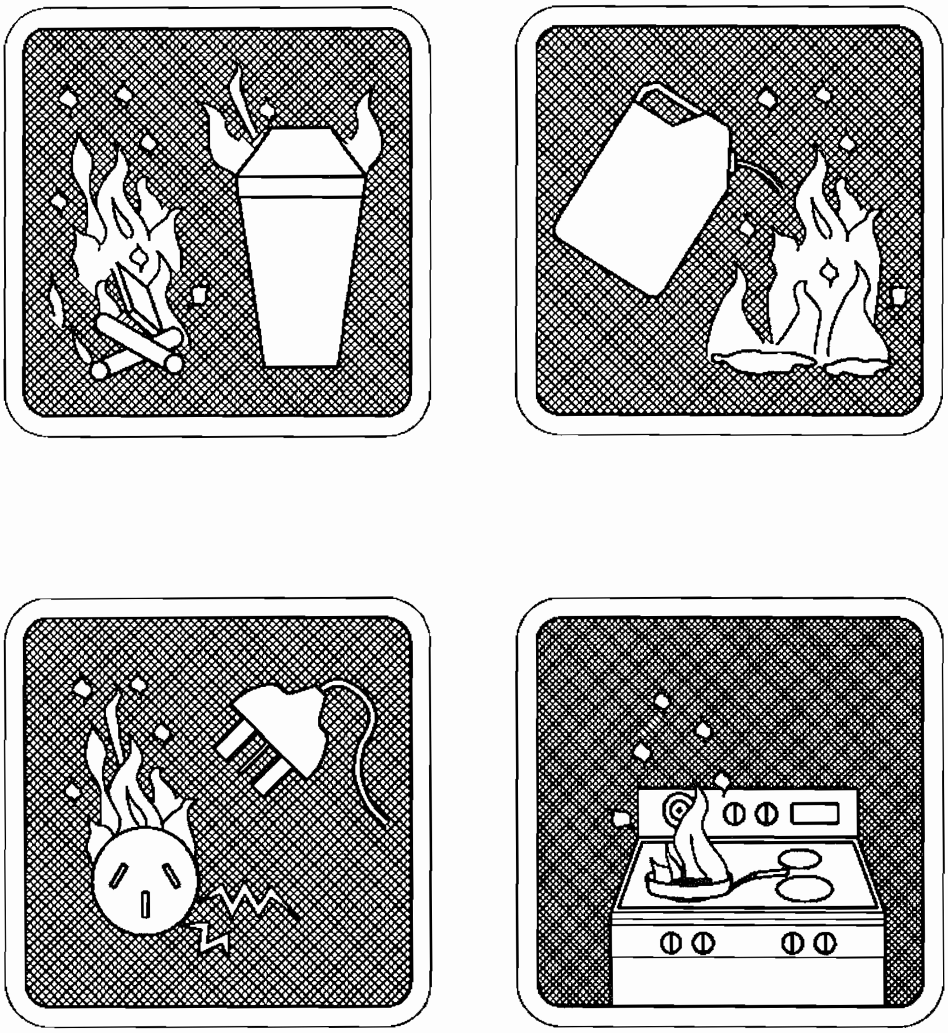
(a) Hold upright.

(b) Remove anti-tamper device.

(c) Aim at fire base.

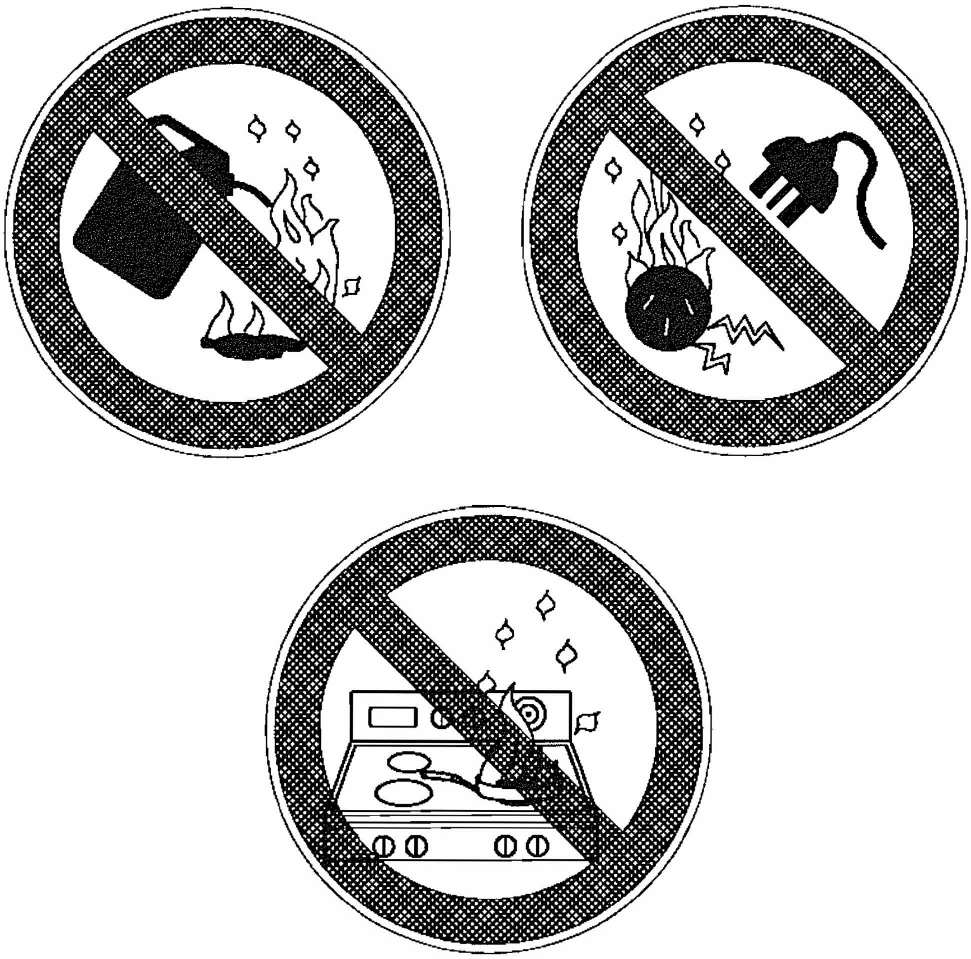
(d) Press button.

9.4.6 Classification The classification shall be shown in pictographs (See Figure 9.1).



(a) Safe condition signs — white symbols on a green field

FIGURE 9.1 (in part) USE CODE PICTOGRAPHS



(b) Prohibition signs — black symbols on a white field with a red diagonal bar and red border

FIGURE 9.1 (in part) USE CODE PICTOGRAPHS

9.5 IDENTIFICATION The following information shall be displayed on an extinguisher and may by included on the front panel:

(a) The manufacturer's or distributor's name, trade name or trademark in letters not larger than those giving the extinguisher type.

(b) The size of the extinguisher in terms of extinguishant mass or volume in grams or millilitres.

(c) The classification and rating shall be shown in accordance with Clause 1.5.

(d) The performance tests described in AS 1850 or NZS 4507 require the following precautionary statements to be included in the markings:

'STILL AIR * FIRE RATINGS' and '* WIND MAY AFFECT'.

(e) Working pressure in kPa.

9.6 LABELLING The information required in Clauses 9.2, 9.4.2, 9.4.3, and this Clause except for the pictographs, shall be applied to the container by one of the following methods:

(a) Imprinting directly onto the coloured container.

(b) By affixing a clear label with print in a colour contrasting with the container colour.

9.7 EXPORT EXTINGUISHERS Extinguishers manufactured in Australia for the export market may be coloured and labelled to meet the regulations of the country of intended destination. Such extinguishers shall have an additional label as follows:

(a) This extinguisher complies with AS 4353 except the identification colour and labels which are specific to (country of intended destination).

(b) Not to be sold in Australia (due to difference in colour codings and labels).

SECTION 10 PACKAGING

The supplier shall control the packing and packaging processes (including materials used) to the extent necessary to ensure conformance to specified requirements.

APPENDIX A

EXTERNAL CORROSION TEST

(Normative)

A1 SCOPE This Appendix sets out the method of determining the ability of an extinguisher to operate after it is subjected to a corrosive environment.

A2 PRINCIPLE An extinguisher is suitably positioned within a test cabinet and subjected to a 5% neutral salt spray test for a period of not less than 480 h. The extinguisher shall operate normally on conclusion of the test.

A3 APPARATUS A suitable test cabinet having a salt spray cone of approximately 20° included angle.

A4 PROCEDURE The procedure shall be as follows:

(a) Select a fully charged extinguisher.

(b) Position the extinguisher within the test cabinet between 15° and 30° to the horizontal to ensure satisfactory concentration of salt spray on the extinguisher.

NOTE: Preferred angle is 20°.

Where fittings are attached to the cylinder by welding, the extinguisher shall be positioned so as to limit the salt solution build-up on such fittings.

(c) Expose the extinguisher to the salt spray for a period of not less than 480 h.

(d) Wash the extinguisher under running tap water and dry it by standing it in a suitable ambient temperature environment prior to assessment.

(e) Operate the extinguisher in its operational mode within 24 h of the conclusion of the test.

A5 ASSESSMENT The following shall be reported:

(a) Information identifying the extinguisher.

(b) Result of the discharge test.

(c) Reference to this test method, i.e. AS 4353 Appendix A.

APPENDIX B

OPERATING HEAD IMPACT TEST

(Normative)

B1 SCOPE This Appendix sets out the method for determining the resistance to impact of aerosol fire extinguishers operating heads.

B2 PRINCIPLE A correctly charged extinguisher is mounted on a prepared base and its operating head is subjected to an impact test in the vertical direction, with safety device fitted.

B3 APPARATUS The following apparatus is required:

(a) A striker, of mass 4 kg, with a flat striking surface approximately 75 mm diameter, mounted in guides so as to strike the extinguisher at the nominated test point.

(b) A heavy rigid base, on which the extinguisher can be mounted directly below the striker in the upright position.

B4 PROCEDURE The procedure shall be as follows:

(a) Assemble the operating head to the extinguisher container and fully charge the extinguisher to the normal operating pressure.

(b) Condition the fully charged extinguisher for a period of not less than 24 h at a temperature of not more than 0°C.

(c) Immediately after the extinguisher's removal from the conditioning equipment, place the extinguisher on the prepared base in an upright position and drop the striker from a height calculated by the following equation to impact on the uppermost part of the operating head assembly:

$$h = M/20 \qquad \ldots (2)$$

where

h = height of fall of the striker, in metres

M = total mass of the extinguisher, in kilograms.

(d) Visually inspect the operating head for any defect which would prevent its operation, or cracks.

NOTE: If leaks or defects are detected, the test should be terminated.

(e) Conduct an effective discharge test in accordance with the requirements of Clause 7.3 in not less than 5 min of impact.

B5 RESULTS The following shall be reported:

(a) Information identifying the operative head.

(b) Any evidence of pressure leaks or defects in the operating head that would prevent its operation following the discharge test specified in Paragraph B4(e).

(c) Results of discharge test.

(d) Reference to this test method, i.e AS 4353 Appendix B.

Standards Australia

Standards Australia is an independent company, limited by guarantee, which prepares and publishes most of the voluntary technical and commercial standards used in Australia. These standards are developed through an open process of consultation and consensus, in which all interested parties are invited to participate. Through a Memorandum of Understanding with the Commonwealth government, Standards Australia is recognized as Australia's peak national standards body.

Standards New Zealand

The first national Standards organization was created in New Zealand in 1932. The Standards Council of New Zealand is the national authority responsible for the production of Standards.
Standards New Zealand is the trading arm of the Standards Council established under the Standards Act 1988.

Australian/New Zealand Standards

Under a Memorandum of Understanding between Standards Australia and Standards New Zealand, Australian/New Zealand Standards are prepared by committees of experts from industry, governments, consumers and other sectors. The requirements or recommendations contained in published Standards are a consensus of the views of representative interests and also take account of comments received from other sources. They reflect the latest scientific and industry experience. Australian/New Zealand Standards are kept under continuous review after publication and are updated regularly to take account of changing technology.

International Involvement

Standards Australia and Standards New Zealand are responsible for ensuring that the Australian and New Zealand viewpoints are considered in the formulation of international Standards and that the latest international experience is incorporated in national and Joint Standards. This role is vital in assisting local industry to compete in international markets. Both organizations are the national members of ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission).

Visit our Web sites

www.standards.org.au
www.standards.co.nz

STANDARDS
NEW ZEALAND
PAEREWA AOTEAROA